

## **VIII. CLAIMS APPENDIX**

Claims 1-26 (canceled)

27. A tag comprising an integrated circuit that includes:  
a first antenna that receives an electromagnetic wave;  
a signal receiving system that receives and stores input data derived from the wave;  
a separate power storage component that receives and stores sufficient energy to power the integrated circuit ;  
a data processing system that produces output data from the input data; and  
a second antenna that transmits at least a portion of the output data externally to the tag.
28. A tag comprising an integrated circuit that includes:  
an antenna that receives an electromagnetic wave;  
a separate power storage component that receives and stores sufficient energy to power the integrated circuit ;  
a data processing system that produces output data; and  
electronics that transmits at least a portion of the output data externally to the tag.

29 - 32. (Canceled)

33. The tag of claim 27, wherein the wave has a wavelength within a spectrum of the wavelengths from radio waves to ultraviolet light, inclusive.
34. The tag of claim 27, further comprising a memory section that stores at least a portion of the input data and at least a portion of the output data.
35. The tag of claim 34, wherein the memory section is nonvolatile.
36. The tag of claim 27, further comprising a multiplexer that controls flow of the input data.
37. The tag of claim 27, further comprising a pulse generating circuit.

38. The tag of claim 27, wherein the input data is in analog form.
39. The tag of claim 27, wherein the input data is in digital form.
40. The tag of claim 27, wherein the output data is in analog form.
41. The tag of claim 27, wherein the output data is in digital form.
42. The tag of claim 27, further comprising a clock generator circuit.
43. The tag of claim 27, further comprising a shift register circuit.
44. The tag of claim 27, wherein the second antenna is a backscatter type antenna.
45. The tag of claim 27, wherein the integrated circuit is built onto material that includes a composition selected from the group consisting of silicone, germanium, GaAs, sapphire, and diamond.
46. The tag of claim 27, further comprising test and monitoring points and pads.
47. The tag of claim 27, further comprising a test and monitoring control circuitry.
48. The tag of claim 27, further comprising circuits selected from a group of circuits including logic, sequencing and switching.
49. The tag of claim 28, wherein the wave has a wavelength within a spectrum of the wavelengths from radio waves to ultraviolet light.
50. The tag of claim 27, wherein the first antenna comprises a dipole antenna.
51. The tag of claim 27, wherein the second antenna comprises a dipole antenna.
52. The tag of claim 51, wherein the second antenna is powered entirely by the energy stored by the power storage component.
53. (Canceled)

- 54. The tag of claim 28, further comprising a memory section that stores at least a portion of the output data.
- 55. The tag of claim 54, wherein the memory section is a nonvolatile memory.
- 56. The tag of claim 28, further comprising a multiplexer that controls flow of the output data
- 57. The tag of claim 28, further comprising a pulse generating circuit.
- 58. The tag of claim 28, further comprising a circuit ~~circuitry~~ that receives input data in analog form.
- 59. The tag of claim 58, wherein the input data is in digital form.
- 60. The tag of claim 28, wherein the output data is in analog form.
- 61. The tag of claim 28, wherein the output data is in digital form.
- 62. The tag of claim 28, further comprising a clock generator circuit.
- 63. The tag of claim 28, further comprising a shift register circuit.
- 64. The tag of claim 51, wherein the second antenna is a backscatter type antenna.
- 65. The tag of claim 28, wherein the integrated circuit is built onto a substrate that includes a material selected from the group consisting of silicone, germanium, GaAs, sapphire, and ~~or~~ diamond.
- 66. The tag of claim 28, further comprising test and monitoring points and pads.
- 67. The tag of claim 28, further comprising test and monitoring control circuitry.
- 68. The tag of claim 28, further comprising circuits selected from a group of circuits including logic, sequencing and switching.

69. The tag according to claim 27, wherein the first antenna is tuned to a frequency from radio waves to ultra violet, inclusive.
70. The tag according to claim 28, wherein the second antenna is tuned to a frequency from radio waves to ultra violet, inclusive.
71. The tag of claim 27 wherein the integrated circuit is monolithic, the first antenna supplies power to both the integrated circuit and the second antenna, and further comprising a memory that stores at least a portion of the input data and at least a portion of the output data.
72. The tag of claim 28 wherein the integrated circuit is monolithic, the first antenna supplies power to the integrated circuit, and further comprising a memory that stores at least a portion of the input data and at least a portion of the output data.
73. The tag of claim 27, further comprising a data processing system that processes the input data and produces at least one decision and takes at least one action.
74. The tag of claim 28, further comprising a data processing system that processes the input data and produces at least one decision and takes at least one action.
75. A tag comprising an integrated circuit that includes:  
a antenna that receives an electromagnetic wave;  
a signal receiving system that receives and stores input data derived from the wave;  
a separate power storage component that receives and stores sufficient energy to power the integrated circuit ; and  
electronics that transmits at least a portion of the input data externally to the tag.
76. The tag of claim 75, wherein the wave has a wavelength within a spectrum of the wavelengths from radio waves to ultraviolet light.
77. The tag of claim 75, wherein the ~~first~~ antenna comprises a dipole antenna.
78. The tag of claim 75, wherein the antenna comprises a loop antenna.

79. The tag of claim 75, further comprising a memory section that stores at least a portion of the input data.
80. The tag of claim 75, further comprising a tuning circuit that tunes the first antenna to receive the wave at a frequency selected from a range from waves to ultraviolet.
81. The tag of claim 79, wherein the memory section is nonvolatile.
82. The tag of claim 27, wherein the driver circuit drives the second antenna selected from a group including full wave, half-wave and quarter-wave reflectors.
83. The tag of claim 75, further comprising a multiplexer that controls flow of the input data.
84. The tag of claim 75, further comprising a pulse generating circuit.
85. (Canceled)
86. (Canceled)
87. The tag of claim 27, wherein the first and second antennas are a single antenna.
88. (Canceled)
89. (Canceled)
90. The tag of claim 75, further comprising a circuit that receives input data in analog form.
91. The tag of claim 75, wherein the input data is in digital form.
92. The tag of claim 75, wherein the output data is in analog form.
93. The tag of claim 75, wherein the output data is in digital form.
94. The tag of claim 75, further comprising a clock generator circuit.
95. The tag of claim 75, further comprising a shift register circuit.

96. The tag of claim 75, further comprising a data processing system that processes the input data and produces at least one decision and takes at least one action.
97. The tag of claim 75, wherein the integrated circuit utilizes a substrate that includes a material selected from the group consisting of silicone, germanium, GaAs, sapphire and diamond.
98. The tag of claim 75, further comprising test and monitoring points and pads.
99. The tag of claim 75, further comprising test and monitoring control circuitry.
100. The tag of claim 75, further comprising circuits selected from the group of circuits consisting of logic, sequencing, and switching circuits.
101. The tag of claim 75, wherein the antenna comprises a single pole antenna.
102. The tag of claim 27, wherein the first antenna comprises a loop antenna.
103. The tag of claim 27, wherein the second antenna comprises a loop antenna.
104. The tag of claim 27, wherein the first antenna comprises a single pole antenna.
105. The tag of claim 27, wherein the second antenna comprises a single pole antenna.
106. The tag of claim 28, wherein the antenna comprises a single pole antenna.
107. The tag of claim 28, wherein the antenna comprises a loop antenna.
108. The tag of claim 28, wherein the antenna is a dipole type antenna.
109. The tag of claim 108, wherein the antenna is a backscatter type antenna.